

Assessment of Thyroid Profile Among Pre and Postmenopausal Women

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Conflict of interest: Nil

Abstract

Background: Thyroid disorders are reported in higher magnitude among women than men. Various reports have shown an increasing trend of thyroid disorders with an increase in age. Occurrence of thyroid disorders such as hypothyroidism, autoimmunity, nodular goiter, and cancer was the most often reported in post-menopausal and elderly women than younger women. **Material & Methods:** 100 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and 100 pre-menopausal women of age group 34-49 years according to inclusion and exclusion criteria were enrolled in the present study. Study participants were enrolled by simple random sampling. Clearance from the hospital ethics committee was taken before the start of the study. Written informed consent was taken from each study participant. **Results:** In the present study, out of total study participants, based on the thyroid function test status, the mean value of total T3 among pre-menopausal group was 142.4 ± 10.9 and the mean value of total T3 among post-menopausal group was 169.4 ± 11.8 . the mean value of total T4 among pre-menopausal group was 8.1 ± 1.3 and the mean value of total T4 among post-menopausal group was 9.3 ± 1.2 . the mean value of TSH among pre-menopausal group was 12.4 ± 4.8 and the mean value of TSH among post-menopausal group was 20.4 ± 5.1 . the mean value of free T3 among pre-menopausal group was 286 ± 13.4 and the mean value of free T3 among post-menopausal group was 312 ± 15.6 the mean value of free T4 among pre-menopausal group was 1.23 ± 1.1 and the mean value of free T4 among post-menopausal group was 1.38 ± 1.2 . **Conclusion:** We concluded from the present study that thyroid dysfunction suggesting from the thyroid profile in post-menopausal women. We recommend the thyroid profile of all post-menopausal women to diagnose and treat the thyroid dysfunction early.

Keywords: Thyroid dysfunction, post-menopausal women, pre-menopausal women.

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Introduction

It is well established in various researches that thyroid hormones function a very important role in the development, regulation of metabolism, protein synthesis, and functioning of other hormones[1]. The thyroid gland is a butterfly-shaped

endocrine gland that is situated anatomically in the anterior aspect of the root of the neck and comprises two bulky lateral lobes which are connected by a thin isthmus[2]. The thyroid gland secretes several hormones such as triiodothyronine

(T3), thyroxine (T4), and calcitonin. The prevalence and magnitude of all thyroid disorders are associated and dependent on numerous risk factors and confounding factors[3].

The thyroid hormones control the metabolism of macromolecules, oxygen consumption, and the basal metabolic rate (BMR) of body cells and are essential for normal growth and maturation of the body as well as they are essential for proper development of the peripheral and central nervous system[4]. Peripheral metabolism of thyroid hormones and pituitary-thyroid axis reported to be affected in various diseases and characterized by the Low T3 levels which are followed by subclinical hypothyroidism findings[5].

Thyroid disorders are reported in higher magnitude among the general population, although their prevalence is also high reported among women than men. Various reports have shown an increasing trend of thyroid disorders with the increase in age[6]. Occurrence of thyroid disorders such as hypothyroidism, autoimmunity, nodular goiter, and cancer was the most often reported in post-menopausal and elderly women than younger women[7]. We conduct the present study to assess the thyroid dysfunction among pre-and post-menopausal women at our tertiary care hospital.

Materials and methods

The present cross-sectional, observational study was conducted at the department of general medicine of our tertiary care hospital. The study was an observational study conducted during a period of six months. The study was done at a 90% confidence interval at 10% of maximum allowable error. The sample size of 200 patients was calculated by epi info software. 100 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and 100 pre-menopausal women of age group 34-49 years according to inclusion and exclusion criteria were enrolled in the present study.

Study participants were enrolled by simple random sampling. Clearance from the hospital ethics committee was taken before the start of the study. Written informed consent was taken from each study participant.

For the study purpose, any woman who had no menstruation for a minimum period of 1-year duration was considered a post-menopausal woman. Previously diagnosed cases of thyroid disorders, diabetes mellitus, hypertension, obesity, and systemic diseases were excluded from the present study. All the study participants were subjected to general physical and clinical examination and detailed history was recorded from all of them. All the study participants were subjected to routine blood investigation for complete blood count and thyroid function tests. All the recorded data was entered in an Excel spreadsheet on Microsoft Excel 2016. The statistical analysis was done using the Statistical software package SPSS v22 and Epi Info v7.2. A p-value <0.05 with 95% confidence intervals was considered statistically significant.

Results

In the present study we enrolled a total of 100 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and 100 pre-menopausal women of age group 34-49 years according to inclusion and exclusion criteria were enrolled in the present study. Among the study participants, all the women in the pre-menopausal group were ranged from age 34 to 49 years with a mean age of 42.4 ± 5.6 years. All the women in the post-menopausal group were ranged from age 51 to 55 years with the mean age of 52.9 ± 1.8 years. Out of the total study participants, among all the women in the pre-menopausal group, 8% had hyperthyroidism, 34% had hypothyroidism and 58% had normal thyroid functions. Among all the women in the post-menopausal group, 11% had hyperthyroidism, 39% had hypothyroidism

and 50% had normal thyroid functions.
(Table 1)

Table 1: Distribution of study subjects according to the thyroid profile.

Thyroid disorders	post-menopausal group	pre-menopausal group	P value
Hyperthyroid	11%	8%	>0.05
Hypothyroid	39%	34%	
Normal	50%	58%	

In the present study, out of total study participants, based on the thyroid function test status, the mean value of total T3 among the pre-menopausal group was 142.4 ± 10.9 and the mean value of total T3 among the post-menopausal group was 169.4 ± 11.8 . the mean value of total T4 among the pre-menopausal group was 8.1 ± 1.3 and the mean value of total T4 among the post-menopausal group was 9.3 ± 1.2 . the mean value of TSH among the pre-menopausal group was 12.4 ± 4.8 and the

mean value of TSH among the post-menopausal group was 20.4 ± 5.1 . the mean value of free T3 among the pre-menopausal group was 286 ± 13.4 and the mean value of free T3 among post-menopausal group was 312 ± 15.6 . the mean value of free T4 among pre-menopausal group was 1.23 ± 1.1 and the mean value of free T4 among post-menopausal group was 1.38 ± 1.2 . All these differences between both groups were statistically non-significant.(Table 2)

Table 2: Thyroid dysfunction among study participants.

Thyroid function test	post-menopausal group	pre-menopausal group	P value
Total T3	169.4 ± 11.8	142.4 ± 10.9	>0.05
Total T4	09.3 ± 1.2	08.1 ± 1.3	>0.05
TSH	20.4 ± 5.1	12.4 ± 4.8	>0.05
Free T3	312 ± 15.6	286 ± 13.4	>0.05
Free T4	01.38 ± 1.2	01.23 ± 1.1	>0.05

Discussion

In the present study we enrolled a total of 100 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and 100 pre-menopausal women of age group 34-49 years according to inclusion and exclusion criteria were enrolled in the present study. Among the study participants, all the women in pre-menopausal group were ranged from age 34 to 49 years with a mean age of 42.4 ± 5.6 years. All the women in post-menopausal group were ranged from age 51 to 55 years with the mean age of 52.9 ± 1.8 years. Similar results were obtained in a study conducted by Shetty AGN et al among 50 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and 50 pre-menopausal women of age group 34-49 years. They

reported similar findings as to the present study[8]. Similar results were obtained in a study conducted by Kapadia N et al among 50 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and 50 pre-menopausal women of age group 34-49 years. They reported similar findings as to the present study[9].

In the present study, based on the thyroid function test status, out of the total study participants, among all the women in pre-menopausal group, 8% had hyperthyroidism, 34% had hypothyroidism and 58% had normal thyroid functions. Among all the women in post-menopausal group, 11% had hyperthyroidism, 39% had hypothyroidism and 50% had normal thyroid functions. Similar results were obtained in a study conducted by G.

Bordoloi et al among 304 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and pre-menopausal women of age group 34-49 years. They reported similar findings as the present study[10]. Similar results were obtained in a study conducted by Garg N et al among 100 post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria. They reported similar findings as the present study[11].

In the present study, out of total study participants, based on the thyroid function test status, the mean value of total T3 among pre-menopausal group was 142.4 ± 10.9 and the mean value of total T3 among post-menopausal group was 169.4 ± 11.8 . the mean value of total T4 among pre-menopausal group was 8.1 ± 1.3 and the mean value of total T4 among post-menopausal group was 9.3 ± 1.2 . the mean value of TSH among the pre-menopausal group was 12.4 ± 4.8 and the mean value of TSH among the post-menopausal group was 20.4 ± 5.1 . the mean value of free T3 among the pre-menopausal group was 286 ± 13.4 and the mean value of free T3 among the post-menopausal group was 312 ± 15.6 . the mean value of free T4 among the pre-menopausal group was 1.23 ± 1.1 and the mean value of free T4 among the post-menopausal group was 1.38 ± 1.2 . All these differences between both groups were statistically non-significant. Similar results were obtained in a study conducted by Chetna P et al among post-menopausal women of age group 50-55 years according to inclusion and exclusion criteria and pre-menopausal women of age group 34-49 years. They reported similar findings as to the present study[12].

Conclusion

We concluded from the present study that thyroid dysfunction suggesting from the thyroid profile in post-menopausal women. We recommend the thyroid profile of all post-menopausal women to diagnose and treat thyroid dysfunction early.

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